WHAT IS CLAIMED IS:

1. A circular clarifier for separating separable matter from a liquid, comprising:

(a) an influent supply for introducing said liquid into said clarifier to a fill level;

(b) an outlet for discharging effluent from said clarifier;

(c) at least one flocculent collection trough extending within said clarifier proximate said fill level; and

(d) at least one rotatable flocculent handling assembly, wherein each flocculent handling assembly comprises:

(i) a beach movable at an elevation below said trough; and

(ii) a scraper assembly comprising a scraper blade extending upwardly from said beach above said fill level, wherein said scraper assembly is movable relative to said beach to an elevation above said trough when said flocculent handling assembly traverses past said trough.

2. The clarifier as defined in claim 1, wherein said clarifier comprises a plurality of spaced-apart troughs subdividing said clarifier into a plurality of treatment regions, each of said treatment regions being defined between an adjacent pair of said troughs.

3. The clarifier as defined in claim 2, wherein scraper assembly is movable relative to said beach to an elevation above each one of said troughs when said flocculent handling assembly traverses thereby.

4. The clarifier as defined in claim 3, wherein said clarifier further comprises a central hub and a peripheral wall, said hub and said wall defining a container therebetween for containing said liquid, wherein said troughs extend between said hub and said wall at fixed locations.

5. The clarifier as defined in claim 4, wherein said troughs are radially extending.

6. The clarifier as defined in claim 4, wherein said central hub is stationary and wherein said influent supply comprises a plurality of spaced-apart influent inlet ports for permitting regulated flow of said liquid from an interior of said hub into said treatment regions.

7. The clarifier as defined in claim 6, wherein hub comprises a plurality of spaced-apart feed ports, wherein each of said feed ports is adjustable to an open position in communication with at least one of said treatment regions.

8. The clarifier as defined in claim 7, wherein said influent inlet ports are formed on a first rotatable ring, wherein rotation of said first rotatable ring relative to said hub periodically brings said inlet ports into at least partial register with said feed ports to permit the introduction of said liquid into said treatment regions.

9. The clarifier as defined in claim 8, wherein rotation of said first rotatable ring is timed so that said liquid is introduced into each of said treatment regions at a location behind the direction of travel of said flocculent handling assembly, wherein said liquid in advance of said flocculent handling assembly is thereby maintained relatively quiescent.

10. The clarifier as defined in claim 9, wherein said liquid is introduced into said treatment regions in sequence, wherein at any given time some of said feed ports are at least partially open and some of said feed ports are closed.

11. The clarifier as defined in claim 10, wherein said clarifier comprises a plurality of spaced-apart flocculent handling assemblies each rotatable around said hub.

12. The clarifier as defined in claim 11, wherein each of said flocculent handling assemblies comprises a radially extending beach and a radially extending scraper.

13. The clarifier as defined in claim 11, wherein rotation of said plurality of said flocculent handling assemblies is driven by a common drive.

14. The clarifier as defined in claim 11, wherein each of said flocculent handling assemblies is coupled to a second rotatable ring rotatable relative to said hub.

15. The clarifier as defined in claim 14, wherein the number of said flocculent handling assemblies differs from the number of said troughs.

16. The clarifier as defined in claim 15, wherein the number of said troughs is less than the number of said flocculent handling assemblies.

17. The clarifier as defined in claim 16, wherein said clarifier comprises four of said troughs and five of said flocculent handling assemblies.

18. The clarifier as defined in claim 15, wherein the number of said troughs is more than the number of said flocculent handling assemblies.

19. The clarifier as defined in claim 15, wherein only one of said scraper assemblies traverses over one of said troughs at any given time.

20. The clarifier as defined in claim 11, further comprises a holding tank extending within an interior of said hub and a plurality of flocculent discharge ports adjustable to an open position in communication with said holding tank for periodically permitting discharge of flocculent from said troughs into said holding tank.

21. The clarifier as defined in claim 20, wherein each of said troughs is inclined toward one of said discharge ports.

22. The clarifier as defined in claim 21, further comprising an annular outer baffle located in an upper portion of said container in the vicinity of said peripheral wall and an inner baffle surrounding said hub, wherein each of said troughs extends radially between said inner and outer baffles.

23. The clarifier as defined in claim 22, wherein said discharge ports are formed on said inner baffle.

24. The clarifier as defined in claim 23, further comprising a third rotatable ring movable around said hub and comprising a plurality of spaced-apart flocculent outlet ports, wherein said flocculent is intermittently discharged through said discharge ports when said flocculent outlet ports are brought into at least partial register with said discharge ports.

25. The clarifier as defined in claim 24, wherein said first and said third rotatable rings are operatively coupled together and rotate in unison.

26. The clarifier as defined in claim 25, wherein said first and third rotatable rings are formed on a cylindrical tube rotatable about said hub.

27. The clarifier as defined in claim 26 wherein said third ring is disposed above said first ring.

28. The clarifier as defined in claim 27, wherein said second ring is coupled to said cylindrical tube and is rotatable therewith.

29. The clarifier as defined in claim 2, wherein said scraper assembly rotates substantially in unison with said beach between said troughs.

30. The clarifier as defined in claim 8, wherein said influent supply comprises an influent supply chamber in fluid communication with said feed ports for aerating said liquid upstream from said feed ports, wherein said separable matter is separable from said liquid by gas flotation clarification.

31. The clarifier as defined in claim 30, wherein said influent supply chamber receives a first stream of said liquid comprising dissolved gas from an influent source upstream from said influent supply chamber.

32. The clarifier as defined in claim 31, further comprising a holding tank in fluid communication with said influent source for receiving said flocculent from said troughs and recirculating said flocculent to said influent source.

33. Th clarifier as defined in claim 32, further comprising at least one fluid recycle port adjustable between open and closed positions for regulating flow from said influent supply chamber into said holding tank.

34. The clarifier as defined in claim 33, wherein said influent supply chamber and said holding tank are located within said central hub and are in fluid communication when said recycle port is in said open position.

35. The clarifier as defined in claim 34, further comprising a sediment recycle port for adjustably permitting passage of any sediment settling in a bottom portion of said container into said holding tank.

36. The clarifier as defined in claim 35, further comprising a plurality of rake assemblies for conveying said sediment toward said sediment recycle port, wherein each of said rake assemblies extends underneath a corresponding beach and is movable therewith.

37. The clarifier as defined in claim 4, wherein said beach comprises an upper surface extending in a substantially horizontal plane and movable through said container below said fill level.

38. The clarifier as defined in claim 37, wherein a surface layer comprising flocculent forms at said fill level of said liquid within said container, and wherein said beach creates a shear plane proximate a lower portion of said surface layer as said beach moves through said container.

39. The clarifier as defined in claim 38, wherein said beach has the shape of a truncated segment of a circle.

40. The clarifier as defined in claim 39, wherein said beach is coupled to a third rotatable ring rotatable about said hub.

41. The clarifier as defined in claim 40, further comprising a plurality of generally vertically disposed baffles extending outwardly from said third rotatable ring between said beaches.

42. The clarifier as defined in claim 4, further comprising an outer weir surrounding said peripheral wall for collecting said effluent, wherein said weir is in communication with said outlet for discharging effluent from said container.

43. The clarifier as defined in claim 11, wherein rotation of said flocculent handling assemblies at locations between said troughs subdivides each treatment region receiving a flocculent handling assembly into a float subzone in advance of said flocculent handling assembly and a fill subzone in behind of said flocculent handling assembly.

44. The clarifier as defined in claim 43, wherein said beach defines the lower boundary of said float subzone as said beach approaches a next-in-sequence one of said troughs.

45. The clarifier as defined in claim 38, wherein a surface layer comprising said flocculent forms at said fill level within said float subzone, and wherein said beach creates a shear plane proximate a lower portion of said surface layer as said beach moves through said treatment region.

46. The clarifier as defined in claim 45, wherein said troughs extend a short distance above said fill level.

47. The clarifier as defined in claim 46, wherein said float subzone progressively decreases in size and said fill subzone progressively increases in size as said flocculent handling assembly traverses said treatment region, thereby causing at least part of said surface layer in said float subzone to rise above said fill level and gently spill over a front edge of said next-in-sequence trough for collection of flocculent therein.

48. The clarifier as defined in claim 47, wherein said flocculent handling assembly increases the concentration of said flocculent within said float subzone.

49. The clarifier as defined in claim 4, wherein said trough has the shape of a truncated segment of a circle and comprises a front edge, a rear edge and a trough bottom surface extending therebetween.

50. The clarifier as defined in claim 49, wherein said scraper assembly comprises an elongated scraper blade and a vertical adjustment assembly for lifting said scraper blade in the vicinity of said trough front edge and lowering said scraper blade in the vicinity of said trough rear edge.

51. The clarifier as defined in claim 50, wherein a bottom edge of said scraper blade contacts said beach at positions between said troughs.

52. The clarifier as defined in claim 51, wherein said vertical adjustment assembly comprises a leading support arm and a trailing support arm each extending between a first end proximate an inner portion of said container and a second end proximate an outer portion of said container, said vertical adjustment assembly further comprising a mechanical linkage coupling said support arms to each other and to said scraper blade, and an actuator for varying the angular spacing between said support arms thereby causing vertical displacement of said scraper blade.

53. The clarifier as defined in claim 52, wherein said scraper blade extends radially between said inner and outer portions of said container, and wherein said scraper blade rotates in a first arc in a plane of rotation within said container.

54. The clarifier as defined in claim as defined in claim 53, wherein said support arms move in a second arc in a support plane parallel to

said plane of rotation, wherein said support arms extend along a radial axis of said second arc.

55. The clarifier as defined in claim 54, wherein said support plane is disposed above said plane of rotation.

56. The clarifier as defined in claim 55, wherein said actuator comprises a cam assembly operatively coupled to said leading support arm.

57. The clarifier as defined in claim 56, wherein said cam assembly comprises:

(a) a cam ring mounted on an actuator support structure, said ring having at least one cam surface formed thereon; and

(b) a roller coupled to said first end of said first support arm and located on an inner surface of a second ring rotatable relative to said hub, wherein said roller is movable on said cam surface as said second ring rotates relative to said hub to vary the angular distance between said support arms.

58. The clarifier as defined in claim 57, further comprising a drive for driving rotation of said second ring relative to said hub.

59. The clarifier as defined in claim 57, wherein said second ring comprises at least one slot for receiving said first end of said trailing support arm.

60. The clarifier as defined in claim 59, further comprising an adjustable length tie bar coupling said second end of said leading support arm to said second ring.

61. The clarifier as defined in claim 60, wherein said second end of each of said support arms is supported for travel in said second arc.

62. The clarifier as defined in claim 61, wherein said scraper assembly is adapted for travel over a peripheral outer wall located remote from said actuator support structure, wherein each of said support arms has a roller mounted on said second end thereof for rolling motion on an upper surface of said peripheral wall.

63. The clarifier as defined in claim 59, wherein the relative angular velocity of said trailing support arm is reduced when said angular distance between said first and second support arms increases and wherein the relative angular velocity of said trailing support arm is increased when said angular distance between said first and second support arms is reduced.

64. The clarifier as defined in claim 55, wherein said support arms extend in said support plane along radial lines corresponding to opposed truncated edges of an outwardly extending first rhombic pyramid having an apex proximate said first end.

65. The clarifier as defined in claim 64, wherein said linkage comprises a plurality of first V-shaped first linkage elements extending between said support arms, wherein each of said first linkage elements comprises a first segment connected to said leading support arm and a second s egment connected to said trailing support arm, wherein said first and second segments are connected together at first connectors disposed between said support arms, wherein each of said first connectors is located on a radial axis intersecting said first connectors and corresponding to an edge of said first rhombic pyramid located between said opposed edges.

65. The clarifier as defined in claim 64 , wherein said linkage further comprises a stabilizer shaft extending along said radial axis intersecting said first connectors between at least some of said first connectors.

66. The clarifier as defined in claim 65, wherein said linkage further comprises a plurality of second linkage elements for coupling said first connectors to said scraper blade.

67. The clarifier as defined in claim 66, wherein said linkage comprises a plurality of spaced-apart second connectors on said scraper blade, wherein each of said second connectors is (a) coupled to a corresponding one of said first connectors and (b) is located on said scraper blade at a location in a plane extending perpendicular to said plane of rotation and passing through said trailing support arm at a location where one of said first linkage elements is connected thereto.

68. The clarifier as defined in claim 67, wherein at least some of said second linkage elements each further comprise a third connector disposed between said first and second connectors, wherein said third connector is supported for movement in a plane perpendicular to said plane of rotation along an axis intersecting a corresponding one of said first connectors.

69. The clarifier as defined in claim 68, wherein said second linkage elements further comprise third, fourth, fifth and sixth segments together defining a rhombic shape for linking said first and third connectors together, wherein said rhombic shape corresponds to the cross-sectional shape of an inwardly projecting second rhombic pyramid having its apex on said radial axis intersecting said first connectors.

70. The clarifier as defined in claim 69, further comprising a seventh segment for coupling said each of said third connectors to a corresponding one of said second connectors.

71. A method of treating liquid influent in a circular clarifier having a container for holding said influent and at least one trough extending

at approximately the fill level of said influent within said container, said method comprising:

(a) introducing said influent into a treatment region of said container in the vicinity of said trough;

(b) causing a fraction of said influent comprising separable matter to form a surface layer of flocculent in a flotation subzone of said treatment region; and

(c) confining said flocculent within said flotation subzone and gradually decreasing the volume of said flotation subzone to cause said flocculent to rise above said fill level and gently spill into said trough without substantially disrupting said flocculent.

72. The method as defined in claim 71, wherein said clarifier comprises a rotatable flocculent handling assembly and wherein said step of gradually decreasing the volume of said flotation subzone comprises rotating said flocculent handling assembly through said treatment region.

73. The method as defined in claim 72, wherein said flocculent handling assembly comprises a beach having a generally horizontally disposed upper surface, wherein said beach defines the lower boundary of said flotation subzone.

74. The method as defined in claim 72, wherein rotation of said flocculent handling assembly in said treatment region increases the concentration of said flocculent in said flotation subzone.

75. The method as defined in claim 74, wherein said flocculent handling assembly further comprises a scraper blade extending upwardly from said beach.

76. The method as defined in claim 71, wherein said separable matter is caused to form said surface layer of flocculent by a gas flotation process and wherein treatment region is operable in a fill phase, a float phase or a combination fill/float phase.

77. The method as defined in claim 76, wherein rotation of said flocculent handling assembly through said treatment region subdivides said region into said flotation subzone in advance of the direction of travel of said assembly and a fill subzone behind said assembly, wherein said influent is introduced into said fill subzone of said treatment region in said fill phase and said fill/float phase.

78. The method as defined in claim 72, wherein said trough is stationary and said flocculent handling assembly is movable relative to said trough.

79. The method as defined in claim 73, wherein said beach forms a fluid shear plane within said treatment region proximate a lower portion of said flocculent.

80. The method as defined in claim 71, wherein said influent is introduced into said container continuously.

81. The method as defined in claim 75, wherein said influent is introduced into said container continuously.

82. The method as defined in claim 81, wherein said clarifier comprises a plurality of radially-spaced apart troughs and a plurality of separate treatment regions, each of said treatment regions being defined between an adjacent pair of said troughs, wherein said influent is sequentially introduced into said treatment regions in a timed sequence such that said flocculent is substantially quiescent in at least some of said flotation subzones in advance of the direction of rotation of said flocculent handling assembly.

83. The method as defined in claim 82, wherein said scraper blade traverses substantially all of the exposed surface of said treatment regions as it rotates within said container.

84. The method as defined in claim 83, further comprising vertically displacing said scraper blade in the vicinity of each of said troughs to enable said scraper blade to pass thereover and then descend into the next-in-sequence one of said treatment regions.

85. The method as defined in claim 84, wherein said container is defined between a central hub and a peripheral wall of said clarifier, and wherein each of said troughs extends radially within said container at spaced locations, said central hub having a plurality of feed ports formed therein at spaced locations, wherein the step of introducing influent into said treatment regions in a timed sequence comprises rotating a first rotatable ring around said hub, said ring having a plurality of influent inlet ports which are sequentially brought into at least partial register with said feed ports to permit the passage of said influent therethrough.

86. The method as defined in claim 85, further comprising the step of periodically discharging at least part of said flocculent from each of said troughs into a holding tank disposed within said central hub.

87. The method as defined in claim 85, further comprising circulating said influent within an influent supply chamber in fluid communication with said feed ports, wherein said influent supply chamber continuously receives a supply of said influent from an influent source.

88. The method as defined in claim 87 , wherein said influent supply chamber is located within said central hub and wherein said influent is circulated within said influent supply chamber in a first direction and is circulated within said container, after passage through said feed ports, in a second direction opposite said first direction.

89. The method as defined in claim 88, wherein said influent source is a bioreactor located upstream from said clarifier.

90. The method as defined in claim 89, further comprising mixing in said influent supply chamber a first stream of said influent comprising dissolved gas and a second stream of said influent comprising dispersed gas.

91. The method as defined in claim 86, wherein said holding tank is in fluid communication with a bioreactor located upstream from said clarifier and wherein said method further comprises recycling a portion of said influent to said holding tank.

92. The method as defined in claim 92, further comprising conveying sediments from a bottom portion of said conveyer to said holding tank.

93. The method as defined in claim 75, further comprising adjusting the position of said scraper blade relative to an upper surface of said beach.

94. The method as defined in claim 86, wherein said flocculent collected in each of said troughs comprises return activated sludge and waste activated sludge and wherein said method further comprises discharging said return activated sludge from said troughs into said holding tank and discharging said waste activated sludge from said troughs to a location separate from said holding tank.

95. The method as defined in claim 86, wherein said flocculent is discharged from each of said troughs into said holding tank sequentially.

96. The method as defined in claim 95, further comprising maintaining a hydraulic head difference between said troughs and said holding

tank, whereby said flocculent periodically flows from each of said troughs into said holding tank without the use of pumps.

97. The method as defined in claim 96, wherein each of said troughs comprises a flocculent discharge port proximate said central hub and wherein said clarifier further comprises a rotatable ring having a plurality of spaced-apart flocculent outlet ports, said method further comprising rotating said rotatable ring around said hub to periodically bring said discharge port into at least partial alignment with one of said outlet ports to permit passage of flocculent therethrough into said holding tank.

98. The method as defined in claim 84, wherein said scraper blade is supported for rotational movement by a leading support arm and a trailing supports arm and wherein said step of vertically displacing said scraper blade comprises adjusting the angular distance between said support arms in the vicinity of each of said troughs.

99. The method as defined in claim 98, further comprising maintaining said supports arms in a rotational plane extending above the plane of rotation of said scraper blade.

100. A clarifier for separating separable matter from a liquid, comprising:

(a) a container for holding said liquid;

(b) a plurality of troughs extending in said container at spaced-apart locations, wherein said troughs extend at approximately the surface level of said liquid in said container;

(c) a plurality of spaced-apart beaches rotatable relative to said troughs within said container at an elevation below said troughs; and

(d) a plurality of scraper blades, each of said blades extending upwardly from a corresponding one of said beaches and being rotatable therewith, wherein said scraper blades subdivide said container into a plurality of liquid treatment cells, each of said treatment cells being defined between two of said scraper blades.

101. The clarifier as defined in claim 100, wherein each of said scraper blades is movable relative to said corresponding one of said beaches to an elevation above said troughs when said corresponding one of said beaches traverses past one of said troughs.

102. The clarifier as defined in claim 100, wherein each of said beaches has a leading edge and a trailing edge and wherein each of said scraper blades extends upwardly from said corresponding one of said beaches proximate said trailing edge thereof.

103. The clarifier as defined in claim 102, wherein said clarifer comprises

(a) a central hub and a peripheral wall, said container being defined therebetween;

(b) an influent supply chamber located within an interior of said hub for receiving a supply of said liquid; and

(c) a plurality of spaced-apart fluid feed ports formed in said hub for introducing said liquid from said influent supply chamber into at least some of said treatment cells within said container.

104 The clarifier as defined in claim 103, wherein said central hub and said peripheral wall are cylindrical and wherein each of said troughs and said beaches extends from said hub to said peripheral wall.

105. The clarifer as defined in claim in claim 104, further comprising a first rotatable ring having a plurality of influent inlet ports formed therein at spaced locations, wherein said first ring is rotatable relative to said hub to periodically bring said inlet ports into alignment with said feed ports.

106. The clarifier as defined in claim 105, wherein said beaches are coupled to a second rotatable ring and wherein said scraper blades are coupled to a third rotatable ring, wherein each of said second and third rotatable rings are rotatable relative to said hub.

107. The clarifier as defined in claim 106, wherein said first, second and third rotatable rings are operatively connected together.

108. The clarifier as defined in claim 107, wherein said first, second and third rotatable rings form portions of a cylinder rotatable relative to said hub.

109. The clarifer as defined in claim 107, wherein said hub and said troughs are stationary, and wherein each of said troughs has a front edge and a rear edge.

110. The clarifier as defined in claim 109, wherein each of said treatment cells is defined between a leading scraper blade and a trailing scraper blade, each of said treatment cells being movable past each of said troughs in sequence in a direction of rotation.

111. The clarifier as defined in claim 110, wherein said liquid is introduced into each one of said treatment cells during a fill period commencing when said leading scraper blade passes said rear edge of one of said troughs and ending when said trailing scraper blade passes said rear edge of said one of said troughs.

112. The clarifier as defined in claim 111, wherein said one of said treatment cells is subdivided during at least part of said fill period

into a fill subzone between said leading scraper blade and said one of said troughs and a float subzone between said trailing scraper blade and said one of said troughs, wherein said fill subzone expands in size and said float subzone contracts in size as said one of said treatment cells moves relative to said one of said troughs.

113. The clarifier as defined in claim 112, wherein said one of said treatment cells is not in fluid communication with said influent supply chamber during a dwell period commencing when said leading scraper blade passes said front edge of said one of said troughs and ending when said leading scraper blade passes said rear edge of said one of said troughs.

114. The clarifier as defined in claim 113, wherein at least one of said feed ports in communication with said fill subzone is at least partially aligned with one of said inlet ports during said fill period to permit introduction of said liquid into said fill subzone during said fill period.

115. The clarifier as defined in claim 114, wherein said influent is not introduced directly into said float subzone during said fill period, wherein said liquid is substantially quiescent in said float subzone in advance of said trailing scraper blade as it rotates in said direction of rotation.

116. The clarifier as defined in claim 115, wherein said container comprises a plurality of container regions each defined between said one of said troughs and a next-in-sequence one of said troughs, wherein said next-in-sequence one of said troughs is located at a position angularly spaced-apart from said one of said troughs in said direction of rotation, wherein each of said inlet ports formed on said hub is in communication with one of said container regions when said inlet port is at least partially aligned with one of said feed ports.

117. The clarifier as defined in claim 116, wherein said leading scraper blade is aligned with said rear edge of said next-in-sequence one of said troughs when said trailing scraper blade is aligned with said front edge of said one of said troughs at the end of said fill period.

118. The clarifier as defined in claim 116, wherein said leading edge of a corresponding one of said beaches extending below said leading scraper blade is aligned with said front edge of said next-in-sequence one of said troughs when said trailing scraper blade is aligned with said front edge of said one of said troughs.

119. The clarifier as defined in claim 113, wherein a layer of suspended solids forms on the surface of said liquid in said float subzone, wherein the volume of said float subzone decreases as said trailing scraper blade and said corresponding one of said beaches moves in said direction of rotation toward one of said troughs, thereby causing at least part of said layer of suspended solids to rise in said float subzone and gently spill into said one of said troughs.

120. The clarifier as defined in claim 119, further comprising a plurality of flocculent discharge ports at locations spaced-around said central hub for discharging flocculent collection ch from a corresponding one of said troughs into a holding tank located within said interior of said hub, wherein each of said discharge ports is adjustable between open and closed positions.

121. The clarifier as defined in claim 120, wherein said each of said flocculent discharge ports is adjusted from said closed to said open position when said trailing scraper blade is proximate said corresponding one of said troughs.

122. The clarifier as defined in claim 121, wherein each of said flocculent discharge ports is adjusted from said open position to said closed position when said trailing scraper blade moves vertically above a

corresponding one of said beaches to an elevation above said one of said troughs, wherein said trailing scraper blade blocks flow of said liquid into said one of said troughs when said corr esponding discharge port is closing.

123. The clarifier as defined in claim 122, wherein said discharge ports open in sequence as said scraper blades and said beaches move in said direction of rotation.

124. The clarifier as defined in claim 123, further comprising a plurality of flocculent outlet ports formed on second rotatable ring, wherein each of said discharge ports is adjusted to said open position when it is brought into alignment with one of said outlet ports.

125. The clarifier as defined in claim 124, wherein each of said flocculent outlet ports is located above a corresponding one of said beaches.

126. The clarifier as defined in claim 125, wherein a differential head is established across said second rotatable ring between each of said troughs and said holding tank, wherein a substantial portion of said flocculent flows into said holding tank from said troughs when said discharge ports are open without the use of pumps.

127. The clarifier as defined in claim 126, wherein each of said troughs is inclined toward a corresponding one of said discharge ports.

128. The clarifier as defined in claim 124 , wherein said second rotatable ring comprises multiple spaced-apart ones of said outlet ports, wherein each of said discharge ports open multiple times during each revolution of said second rotatable ring.

129. The clarifier as defined in claim 125, wherein said clarifier comprises four discharge ports and five outlet ports, wherein each of said discharge ports opens five times during each revolution of said second rotatable ring.

130. The clarifier as defined in claim 124, further comprising a plurality of radial distribution baffles, wherein each of said baffles extends beneath a corresponding one of said beaches and comprises an outer portion extending underneath said baffle trailing end and an inner portion nearest said hub extending between said baffle leading and trailing ends.

131. The clarifier as defined in claim 116, wherein each of said scraper blades traverse substantially all of the exposed surface of said container regions between said troughs.

132. The clarifier as defined in claim 104, wherein said troughs and beaches extend radially between said central hub and said peripheral wall.

133. The clarifier as defined in claim 124, wherein each of said discharge ports is approximately one half the width of an innermost end of each of said troughs.

134. The clarifier as defined in claim 103, wherein said liquid moves in a first direction in said container and in a second direction opposite said first direction in said influent supply chamber.

135. The clarifier as defined in claim 103, wherein said liquid is introduced into said container continuously.

136. A mechanical actuator for actuating displacement of a workpiece moving in a first arc in a plane of rotation, said actuator comprising:

(a) first and second elongated support arms for supporting said workpiece as it moves through said first arc, wherein each of said support arms extends from a first end thereof to a second end thereof;

(b) a linkage for coupling said first and second support arms together; and

(c) an angular distance adjuster for adjusting the angular distance between said support arms to thereby cause displacement of said workpiece in a direction perpendicular to said plane of rotation at one or more predetermined locations in said first arc.

137. The actuator as defined in claim 136, wherein said first and second elongated support arms move in a second arc in a support plane parallel to said plane of rotation, wherein said first and second support arms extend along a radial axis of said second arc.

138. The actuator as defined in claim 137, wherein said support plane is disposed above said plane of rotation.

139. The actuator as defined claim 137, wherein said angular distance adjuster comprises a cam assembly operatively coupled to said first support arm.

140. The actuator as defined in claim 139, wherein said first and second support arms are coupled to an acutator ring rotatable relative to an actuator support structure.

141. The actuator as defined in claim 140 , wherein said cam assembly comprises:

(a) a cam ring mounted on said actuator support structure, said ring having at least one cam surface formed thereon; and

(b) a roller coupled to said first end of said first support arm and located on an inner surface of said actuator ring, wherein said roller is movable on said cam surface as said actuator ring

rotates relative to said actuator support structure to vary the angular distance between said support arms.

142. The actuator as defined in claim 141, further comprising a drive for driving rotation of said actuator ring relative to said actuator support structure.

143. The actuator as defined in claim 142, wherein said actuator ring comprises at least one slot for receiving said first end of said second support arm.

144. The actuator as defined in claim 143, further comprising an adjustable length tie bar coupling said second end of said first support arm to said actuator ring.

145. The actuator as defined in claim 136, wherein said second end of each of said support arms is supported for travel in said second arc.

146. The actuator as defined in claim 145, wherein said actuator is adapted for travel over a peripheral wall located remote from said actuator support structure, wherein each of said support arms has a roller mounted on said second end thereof for rolling motion on an upper surface of said peripheral wall.

147. The actuator as defined in claim 136, wherein said workpiece is coupled to said linkage.

148. The actuator as defined in claim 136, wherein the relative angular velocity of said second support arm is reduced when said angular distance between said first and second support arms increases and wherein the relative angular velocity of said second support arm is increased when said angular distance between said first and second support arms is reduced.

149. The actuator as defined in claim 136, wherein said first and second support arms extend in said support plane along radial lines corresponding to opposed truncated edges of an outwardly extending first rhombic pyramid having an apex proximate said first end.

150. The actuator as defined in claim 149, wherein said linkage comprises a plurality of first V-shaped first linkage elements extending between said first and second support arms, wherein each of said first linkage elements comprises a first segment connected to said first support arm and a second segment connected to said second support arm, wherein said first and second segments are connected together at first connectors disposed between said first and second support arms, wherein each of said first connectors is located on a radial axis intersecting said first connectors and corresponding to an edge of said first rhombic pyramid located between said opposed edges.

151. The actuator as defined in claim 150 , wherein said linkage further comprises a stabilizer shaft extending along said radial axis intersecting said first connectors.

152. The actuator as defined in claim 150, wherein said linkage further comprises a plurality of second linkage elements for coupling said first connectors to said workpiece.

153. The actuator as defined in claim 152, wherein said linkage comprises a plurality of spaced-apart second connectors on said workpiece, wherein each of said second connectors is (a) coupled to a corresponding one of said first connectors and (b) is located on said workpiece at a location in a plane extending perpendicular to said plane of rotation and passing through said second support arm at a location where one of said first linkage elements is connected thereto.

154. The actuator as defined in claim 153, wherein at least some of said second linkage elements each further comprise a third connector disposed between said first and second connectors, wherein said third connector is supported for movement in a plane perpendicular to said plane of rotation along an axis intersecting a corresponding one of said first connectors.

155. The actuator as defined in claim 154, wherein said second linkage elements further comprise third, fourth, fifth and sixth segments together defining a rhombic shape for linking said first and third connectors together, wherein said rhombic shape corresponds to the cross-sectional shape of an inwardly projecting second rhombic pyramid having its apex on said radial axis intersecting said first connectors.

156. The actuator as defined in claim 155, further comprising a seventh segment for coupling said each of said third connectors to a corresponding one of said second connectors.

157. The actuator as defined in claim 136, wherein said plane of rotation and said support plane are co-planar horizontal planes and wherein said actuator displaces said workpiece in a vertical plane.

158. The actuator as defined in claim 136, wherein said workpiece is an elongated element extending along a radial line of said first arc.

159. The actuator as defined in claim 158, wherein said workpiece is a scraper blade.

160. A mechanical actuator assembly comprising:

(a) an actuator ring rotatable about a support structure; and

(b) a plurality of mechanical actuators as defined in claim 136 mounted at spaced locations on said actuator ring and extending outwardly therefrom.

161. The mechanical actuator assembly as defined in claim 160, further comprising a drive for driving rotation of said actuator ring.

162. The mechanical actuator as defined in claim 161, wherein said support structure comprises a cam ring having a plurality of spaced-apart cam surfaces formed thereon and wherein each of said mechanical actuators comprises a cam assembly, said cam assembly comprising a roller coupled to said first end of said first support arm and positioned proximate an inner surface of said actuator ring for traversing said cam surfaces as said actuator ring rotates relative to said cam ring.

163. The mechanical actuator assembly as defined in claim 162, wherein said cam surfaces are spaced so that only one of said mechanical actuators is traversing one of said cam surfaces at any given time.